



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,926	02/04/2004	Glen McLaughlin	PA2699US	6059
22830	7590	07/11/2008	EXAMINER	
CARR & FERRELL LLP 2200 GENG ROAD PALO ALTO, CA 94303				GUPTA, VANI
ART UNIT		PAPER NUMBER		
3768				
MAIL DATE		DELIVERY MODE		
07/11/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/772,926	MCLAUGHLIN ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	VANI GUPTA	3768

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-8 and 10-24 is/are rejected.
- 7) Claim(s) 9 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 04 February 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____ .                                     |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/7/2008</u> .  | 6) <input type="checkbox"/> Other: ____ .                         |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. ***Claims 1 – 8, 10 – 16, and 18 – 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley (US 6,120,448).***

Regarding **Claims 1 – 6, 10 – 16, and 18 – 24**, Bradley discloses a system that utilizes multiple out-of-phase ultrasonic waveforms to enhance imaging of body tissue of a patient (fig. 1; and col. 2, lines 3 – 32; col. 4, lines 3 – 32).

With respect to **Claim 1, 15, 16, and 18**, Bradley discloses that the receiver receives at least two-out-of-phase pulses modified by the tissue of the body (col. 2, lines 13 - 17). Bradley does not specifically disclose that the receiver unit (fig. 1, #16) is a raw data averager.

However, Examiner notes that the Applicant states in the Specification that using an average function to analyze reflected waveforms is known to those of ordinary skill in the art (p. 4, paragraph [0001]).

Additionally, Bradley explains that many modifications and/or changes can be made to the embodiments while staying within the scope of his invention (col. 4, lines 3 – 4 and 39 – 45).

*Therefore, it would have been prima facie obvious to have modified the teachings of Bradley to include raw data averager with the receiver unit to obtain the invention in the instant Claims 1, 15, 16, and 18.*

With respect to **Claims 7 and 8**, Bradley discloses using an envelope function to assist the signal generator in convolving the multiple out-of-phase signals (col. 2, lines 64 – 67). He does not specifically disclose using a Gaussian or chirped waveform envelope function.

However, Examiner notes that the Applicant does not state that the type of waveform generated is an important consideration of the present invention, and therefore is not critical factor to the invention.

*Therefore, using the claimed waveforms or any other waveform is an obvious matter of design choice, wherein no stated problem is solved or unexpected result obtained in using either type, depending upon desired output, to obtain the invention in the instant **Claims 7 and 8**.*

With respect to **Claims 11 and 12**, although Bradley does not specifically state that his system utilizes a digital or analog delay circuit, he does explain that the transmitter or receiver can either be analog or digital system (col. 4, lines 3 – 6).

Additionally, Examiner notes that the Applicant does not establish the type of delay circuit to be critical to the present invention.

*Therefore, using an analog or digital delay circuit is an obvious matter of design choice, wherein no stated problem is solved or unexpected result obtained in using either type since either delay circuit can effectively provide proper signal delay, depending upon cost and reliability factors, to obtain the invention in the instant **Claims 11 and 12**.*

With respect to **Claims 22 – 24**, Bradley discloses that images of the preferred region of the patient are displayed on a display (fig. 1, #32).

Bradley does not specifically state that display is a computer monitor, flat-panel display, or liquid-crystal display (LCD).

However, Examiner notes that the Applicant states in the Specification that the claimed image display unit “may be any visual display such as, but not limited to, a computer monitor, flat-panel or LCD, cathode-ray tube, or the like.” (p. 14, paragraph [0031]).

Since the Applicant does not state the criticality of the type of display unit used to display images, it is *an obvious matter of design choice, wherein no stated problem is solved or unexpected result obtained in using either type since any type can effectively display medical images, depending upon cost and reliability factors, to obtain the invention in the instant Claims 22 – 24.*

3. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley (US 6,120,448) in view of Daft et al. (US 5,349,524).

Regarding Claim 17, Bradley discloses ultrasonic imaging system comprising a receiver and raw data averager unit.

Bradley does not specifically disclose that the unit further comprises an in-phase and quadrature mixer.

However, Daft teaches a mixer that can receive ultrasound signals (col. 3, lines 38 - 42). The receiver comprises receiver channels that receive in-phase (I) signals and quadrature (Q) signals as one signal (col. 11, lines 50 - 54).

Accordingly, Daft complements the disclosing of Bradley by teaching an ultrasonic imaging system for displaying color flow images, and in particular, an adaptive wall filter that automatically adjusts its central frequency and bandwidth as a function of the received echo signal (col. 3, lines 29 – 33).

*Therefore, it would have been prima facie obvious to modify the receiver and raw data averager unit of Bradley with the teachings of Daft to include the in-phase and quadrature mixer to obtain the invention in the instant **Claim 17**.*

***Allowable Subject Matter***

4. **Claim 9** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 9 is allowed because the subject matter of the independent claims including modulating the multiple “out-of-phase sine waves in a way to produce a chirped Gaussian pulse width modulated waveform” is not taught or reasonably suggested in the prior art of record.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Chapman et al. (US 5,632,277) for an ultrasound imaging system employing phase inversion subtraction to enhance images of regions occupied by non-linear scattering media. The system utilizes first and second ultrasound pulses that are amplitude-modulated signals, wherein the two signals differ by the phase of the harmonic signal. The echo signals generated by these pulses are measured and combined.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VANI GUPTA whose telephone number is 571-270-5042. The examiner can normally be reached on Monday - Thursday; 7:30 - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian L Casler/  
Supervisory Patent Examiner, Art Unit  
3737

/V. G./  
Vani Gupta/  
Examiner, Art Unit 3768

Application/Control Number: 10/772,926

Art Unit: 3737

Page 7